Leicester Precision Medicine Institute/BRC PhD Studentship

Start date September 2017
Available to UK/EU applicants only.

Funding
The studentship offers a Fee waiver for 3 years at UK/EU rates and Stipend for 3 years at Research Council rates. For 2017/8 this will be £14553 pa.

Entry requirements
Bachelor Degree with at least UK 2:1 honours in a relevant subject.
University of Leicester English language requirements apply

Supervisors: Professor Andrew Wardlaw aw24@le.ac.uk and Dr Catherine Pashley chp5@le.ac.uk

Project Title
Studies of the effect of antifungal therapy on the airway microbiome in asthma

Fungal lung disease is a common complication of severe asthma where it is associated with lung damage (1). Fungal involvement in asthma takes two forms, an allergic manifestation and a non-invasive infective pattern which presents as chronic bronchitis. The two forms often co-exist, but can occur independently. Underpinning both these forms is colonisation of the bronchial tree with thermotolerant fungi particularly of the Aspergillus, Penicillium and Candida genera. Antifungal therapy would therefore be expected to be beneficial, but the response is often disappointing which may relate to the poor penetration of systemically delivered antifungals into the bronchial lumen. We found in a trial of voriconazole in asthma that many individuals still grew Aspergillus fumigatus in their sputum (2). Antifungal drug resistance is rising and may also be important.

Research Plan
This project will take advantage of a double blind placebo controlled trial of a novel triazole antifungal that we are undertaking in collaboration with Pulmocide. You will be working alongside the team involved in the trial. Your role will be to address the important question “what effect will this potent inhaled drug have on the bacteria and fungi present in the airways?” You will be extracting DNA from clinical samples using established methods suitable for both fungal and bacterial analyses. You will then be amplifying these samples for analysis by high-throughput sequencing (HTS) and performing the bioinformatics analysis. You will also be generating quantitative PCR date to get an estimate of total bacterial and fungal load. In addition you will be
using a sensitive culture-based assay to look for fungi in these samples (3) and compare the fungal culture data to the bacterial and fungal HTS profiles you generate.

You will learn a broad range of skills involved in undertaking clinically relevant science as well as a range of microbiology skills related to culture and identification of fungi, molecular biology skills related to HTS and bioinformatics skills related to analysis of HTS data.


Informal discussion of the project is welcome and can be arranged by contacting the supervisors via email. Professor Andrew Wardlaw aw24@le.ac.uk and Dr Catherine Pashley chp5@le.ac.uk

TO APPLY FOR THE PhD

Please submit your formal application online at

http://www2.le.ac.uk/research-degrees/phd/applyphd?uol_r=78572a95

Apply for: Campus Based Full Time study/ Infection, Immunity and Inflammation Research / September 2017 entry

Please make sure you indicate the name of the project supervisor and the project title in the space provided within the application.

Draft a brief (1,000 words maximum) personal statement that:

- explains why you want to work in this area
- describes any relevant research experience - for example, as part of a previous degree
- list any academic work you have published or which is awaiting publication

In the funding section of the application select Studentship and from the drop down menu select LPMI

For the closing date please refer to the Studentships web page.